



OF MICHIGAN
JAN 24 1961
PUBLIC HEALTH
LIBRARY

California's Health

Vol. 18, No. 14 · Published twice monthly · January 15, 1961

RADIATION SIMPLIFIED

SIMON KINSMAN, Ph.D., Radiological Health Consultant, United States Public Health Service *

This rudimentary explanation of radiation is being used as a training aid in courses given by staff of the California State Department of Public Health's radiological health program. One course, given in March, 1960, was held at the request of the Humboldt-Del Norte County Health Department after the Pacific Gas and Electric Company announced construction of a 50,000 kilowatt nuclear power plant near Eureka. Trainees included local health department personnel and staff of the State Department of Fish and Game, California Bureau of Livestock Disease Control, and the Eureka Division of Indian Health. A similar course was held in June, 1960, for the Sonoma County Health Department staff. More of these courses are being planned for 1961.

What Is Radiation?

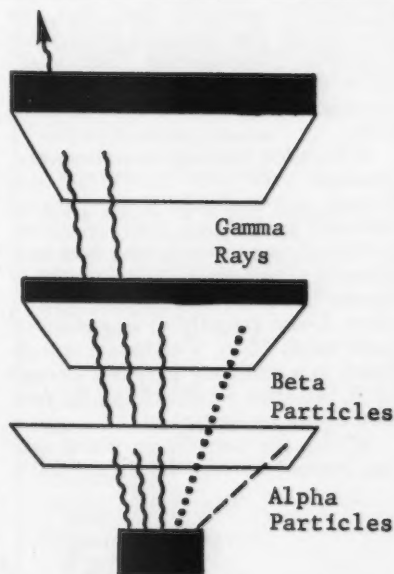
Radiation in a variety of forms is familiar to all of us. Light is radiation we can see. Heat is radiation we can feel. Ultraviolet and X-rays we neither see nor feel. None of the four can be heard or smelled. All are like light because they do not continue after the source (bulb) is turned off or removed.

Radiation is as old as the universe. Stars are intensely radioactive; our earth now only slightly so. Ever since his first appearance, man has been exposed to both visible and invisible radiation from the sun. Like sunshine and rain, thunder and lightning, radioactive substances until very recently occurred only in nature.

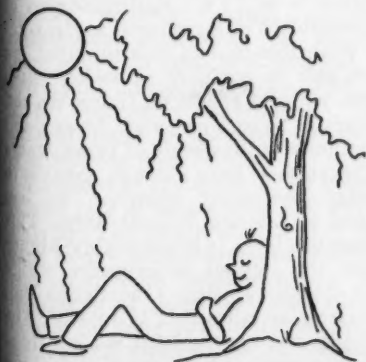
Radiation from radioactive material is a stream of fast flying particles or waves which come from tiny units of matter called atoms. Atoms of a single element often consist of different kinds which behave alike chemically, yet have slightly different weights. These varieties are called "isotopes." The atoms of stable isotopes are not radioactive, but those of unstable or radioactive substances give off portions of themselves, and change into other isotopes in the process.

Within the past sixty-five years we have learned much about radiation. Man-made radiation in the form of X-rays was discovered in Germany in 1895. In France, a year later, natural radioactivity was first identified with uranium. Within two years one of its main sources was isolated—the naturally radioactive element, radium. Invisible rays from this element were soon found to be of three kinds: (1) heavy particles which travel but an inch or so in air, (2) lighter particles which travel a few feet and (3) waves similar to those of light, but too short to be seen by the human eye, which penetrate to considerable distances, even through several inches of lead. These three forms of invisible radiation are called alpha, beta, and gamma rays.

Shortly after the discovery of radium, man learned that for millions



of years another form of invisible radiation had been coming at him from outside the earth's atmosphere. The source of these particles, called "cosmic rays," is still unknown. We do know, however, that they are stopped to some extent by the earth's atmosphere, and that if we were to live in Denver, Colorado, or elsewhere at high elevation, cosmic radiation would be two to four times as intense as it is at sea level. This is why scientists investigating cosmic rays em-



*Dr. Kinsman was on assignment to the California State Department of Public Health July 1, 1959-June 30, 1960.

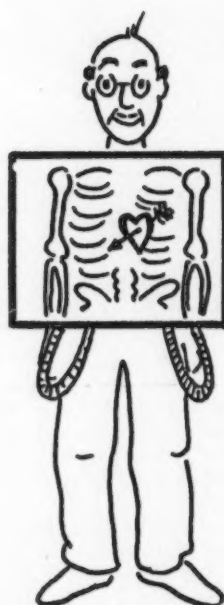


ploy balloons and aircraft to collect information at high altitudes.

Natural radioactive substances are widely distributed. They exist in minute quantities in our bodies, in water we drink, the air we breathe, the soil we cultivate, even in the materials we use for building. Along with the cosmic radiation from space, these tiny sources have been sending out invisible radioactive signals for millions of years. It is against this background of natural radiation that man has lived in the past and lives today. This so-called "background radiation" varies slightly from one locality to another, and also with rain or snow falls.

Within ten years of their discovery, practical uses were found for both X-rays and radium. X-rays proved valuable in locating bone fractures, in identifying diseases, and as a supplement to radium in the treatment of cancer. You have probably had a chest X-ray recently or a picture of your teeth. If so, you have been exposed to a relatively harmless amount of X radiation administered by your own doctor or dentist.

Within the past fifteen years, man has learned to take naturally stable



atoms and make them artificially radioactive. It is these radioactive varieties, or "radioisotopes," which are proving to be among the most useful research tools in the entire history of science. Because they are radioactive,

their radiation tells where they are, even if the amount is extremely small. Their location or movement within plant and animal tissues, and in industrial and chemical processes, can, therefore, be traced by sensitive recording instruments. Used in this manner radioisotopes are spoken of as "tracers."

Is Radiation Dangerous to You?

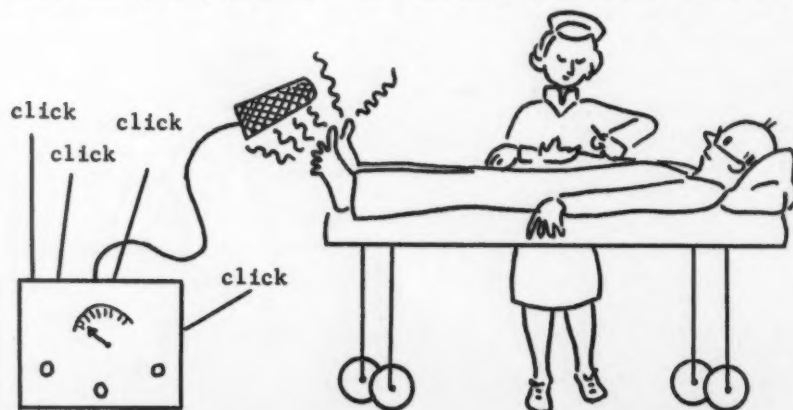
It can be; it may be; but it need not be.

Danger from radiation depends upon the degree of exposure. How dangerous is fire, or exposure to the sun? How dangerous is electricity? It depends upon your exposure. We all use fire. We use electricity, but we do not take chances. We have learned to live with these agents, and we can learn to live with radiation, too.

The chances of your receiving an overexposure to radiation are slight. This depends upon how much you know about radiation and the common methods for protecting yourself against it, and upon whether you are a reasonable person. You can get quite a burn from a match, but you must be close to it. So with radiation. There is little danger if you know what you are doing, and if you follow the safety rules.

Radiation effects on people were noticed shortly after the discovery of X-rays. These effects resulted from extreme exposures due to ignorance. We now have special instruments to detect and measure all types of radiation. The "roentgen" has been adopted as the basic unit for radiation measurement. It is simply a label for a certain amount of radiation, just as the word "inch" is the label or word used to describe a certain distance. Roentgens are commonly referred to as "r's," milliroentgens or thousandths of a roentgen as "mr's."

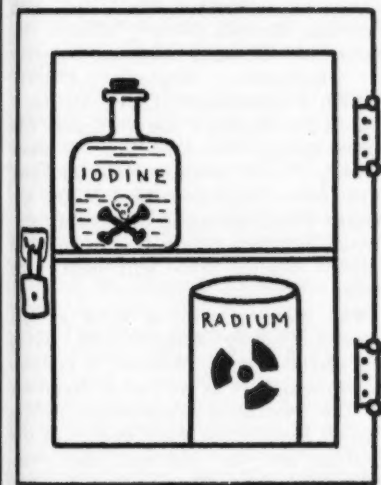
With this unit of measurement, we are able to compare radiation exposure with its effects on living tissues. Years of experience with X-rays and radium and thousands of experiments with animals have made it possible to judge how much radiation we can stand or tolerate without harm. This tolerance level is considerably higher than the amount of exposure which the Atomic Energy Commission employees are permitted to receive. The standard operating limit is a continuing exposure of no more than 100 mr per week, not to be received in amounts greater than 1/20 r (50 mr)



per day, except for unusual cases. Extensive experience indicates that an exposure of this amount can be given you every week of your life without producing any detectable change whatever. This daily average is 1/30 the wartime operating limit established for the atomic bomb project.

How much radiation can you stand? The important thing is that you do not take too much at one time. Small exposures with intervals in between can add up to a fairly high amount without harmful effects because cells either recover by themselves or can be replaced by other cells. Furthermore, you may safely expose a portion of the body to a much higher amount than is permissible for the entire body.

Rapidly growing cells are somewhat more sensitive to radiation than normal cells. Upon this principle is based the treatment by radiation of certain types of cancer.



Radioactive materials can be harmful if within or on the body. You should, therefore, avoid inhaling radioactive substances or getting them into your food or drink, just as you avoid taking in arsenic, lead, or other poisonous substances. The amount might be harmless, but there is no need to take chances.

Radioactive materials differ widely in the rate at which they lose radioactivity. The length of time they are kept in the body also varies. Radium and plutonium remain active for thousands of years and may be retained for long periods in the body, while such elements as radiosodium will be quickly eliminated and decay in a few days. Naturally, you must

be careful to avoid taking even small amounts of the more poisonous materials into your mouth or lungs. This is why eating or smoking is forbidden in some radiation areas.



When you have a chest X-ray taken with the common type of automatic equipment, you receive approximately 0.3 r. As far as the medical profession knows, this is harmless. During an examination of the stomach or intestines, patients frequently receive a series of exposures over a period of a few hours which may total as high as 15 or 20 r. To render a person sterile, the sex organs alone would have to receive a single exposure of 400-800 r, and even more if the total amount were not given at one time. Between 300 and 500 r of X or gamma radiation given to the whole body at once would probably prove fatal. This, however, is a terrific amount, a few thousand times the maximum permissible daily occupational exposure or tolerance.

As one radiation expert put it, "Tolerance is a poor word. Operating limit is better. We can tolerate a lot more radiation than the amount which we have set as our operating limit."

Radiation Areas

As a general precaution, sources of radiation are confined to special "radiation areas" in which they are



either roped off or are clearly indicated. All radiation areas are marked with signs bearing the purple radiation symbol on a white background. Near the source itself will be a warning sign with the purple symbol on a yellow background and a card stating the type of radiation, its strength, and the precautions to be taken.

How to Limit Exposure to Radiation

Exposure to radiation can be limited in three ways: (1) in time, (2) by distance, and (3) by shielding.

If you must work near radiation, the simplest way to limit your exposure is to stay in the vicinity as short a time as possible. If there is a time limit on your job, observe it.

A second method is to maintain a safe distance between you and the source of radiation. If in doubt as to what distance is safe, consult your supervisor or the Bureau of Radiological Health of the State Department of Public Health. In general, the effect of radiation falls off sharply as you increase your distance from its source. Double the distance and your exposure is cut to one-quarter.

Shielding varies in nature and thickness, depending upon the energy

EDMUND G. BROWN, Governor
MALCOLM H. MERRILL, M.D., M.P.H.
State Director of Public Health

STATE BOARD OF PUBLIC HEALTH

CHARLES E. SMITH, M.D., President
San Francisco

MRS. P. D. BEVIL, Vice President
Sacramento

DAVE F. DOZIER, M.D.
Sacramento

L. S. GOERKE, M.D.
Los Angeles

ERROL R. KING, D.O.
Riverside

HERBERT A. LINTS, M.D.
Escondido

ARTHUR E. VARDEN, M.D.
San Bernardino

HENRY J. VOLONTE, D.D.S.
Hillsborough

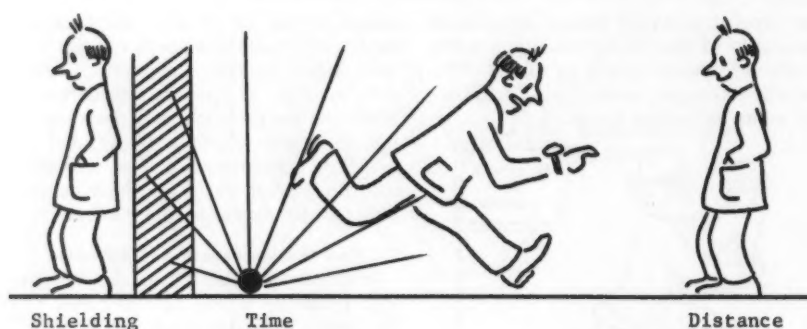
STEPHEN I. ZETTERBERG
Claremont

MALCOLM H. MERRILL, M.D.
Executive Officer
Berkeley

STATE DEPARTMENT OF PUBLIC HEALTH
BUREAU OF HEALTH EDUCATION
2151 BERKELEY WAY
BERKELEY 4, CALIFORNIA

Requests for single copies or for placement on the mailing list may be made by writing to the above address.

Entered as second-class matter Jan. 25, 1949, at the Post Office at Berkeley, California, under the Act of Aug. 24, 1912. Acceptance for mailing at the special rate approved for in Section 1103, Act of Oct. 3, 1917.



and type of the particles or waves. Alpha rays are stopped by a sheet of paper or the surface layer of the skin on our bodies; beta rays by a quarter of an inch of wood or an eighth of an inch of metal; gamma rays and neutrons by substantial amounts of lead or concrete. Special shielding materials such as paraffin and cadmium can also be used effectively to slow down and stop neutron radiation.

Contamination

Contamination is a more serious problem than exposure because it involves actual contact between you and a radioactive substance. An external source of radiation can be removed or shielded; but you cannot run away from something inside of you, or on you. If by accident you get a small quantity of a radioactive isotope on your hands, feet, or street clothes, it might possibly be deposited in your body from the end of a cigarette, through a cut, or in your food. The longer lived materials, if not easily eliminated, might then cause trouble.

Fortunately, however, some isotopes with short half-lives, or ones which are easily eliminated, are valuable in the treatment of disease. Radioiodine, for example, is taken by mouth for certain thyroid conditions; radiosodium is used in measuring the circulation of the blood; and radiophosphorus in treating some types of leukemia.

To guard against contamination, special protective clothing is available in radiation areas. Its use protects the wearer and helps to confine radioactive contamination within these



You can take it with you

areas. Laboratory coats or coveralls are widely used; in some locations caps, shoe covers, canvas or rubber gloves, masks or respirators are also used. Protective clothing worn where radioactive materials are present is specially marked and washed.

Alpha, beta and gamma rays are not "catching" like a cold. Unless your hands, feet, or clothing are actually contaminated with materials which give off radiation, you are quite safe. However, in working with radioactive materials, wear protective clothing and upon removal of this clothing, wash with soap, check your hands, feet, etc., with instruments.



Health of Special Groups Theme of NCPHA Meeting

Recommendations of the Governor's Committee on Medical Aid and Health relative to the health of special groups such as welfare recipients, migrant workers and low-income families, will figure prominently at the January 20 meeting of the Northern California Public Health Association. Bruce Jessup, M.D., Consultant in Rural Health, California State Department of Public Health, will be the featured speaker. Dr. Jessup was director of a special task force on health services for seasonal agricultural workers in California last summer.

Members of the discussion panel following the main address will be: Senator James A. Cobey, Chairman, Senate Committee on Labor and Welfare; Reverend Roger Granados, Executive Director and Pastor, Tracy Neighborhood House; Miss Garnett Pierce, Director of Public Health Nursing, Merced County Health Department; Edward Munson, Director of Sanitation, Monterey County Health Department; Clark Richardson, M.D., Tulare County Health Officer; George N. Anderson, Madera County Public Welfare Director; and Wm. Allen Longshore, Jr., M.D., Assistant Chief, Division of Community Health Services, State Department of Public Health, who will chair the panel.

The meeting will be held at the Merced County Fairgrounds, West 8th and J Streets, Merced. It is open to non-members as well as to members of the Northern California Public Health Association. Co-sponsors of the meeting are the Madera, Mariposa, Merced, and Stanislaus County Health Departments.

Mortality from all infectious diseases dropped in 50 years from 676 per 100,000 in 1900 to 44 per 100,000 in 1956.—*Children in a Changing World*, Published by White House Conference on Children and Youth, 1960.

The two groups at the ends of the age scale—children under six years and persons 65 and over—increased their use of medical services by about 45 percent during the five-year period 1952-53 to 1957-58.—*Progress in Health Services*, February 1960.

EPIDEMIOLOGIC NOTES—YEAR END REPORT

There were 121,523 cases of notifiable infectious disease reported in California from January through November, 1960, as compared to 116,401 cases for the same period in 1959.

Among the most frequently occurring infectious diseases, there was a significant increase in streptococcal infections, which topped the 1960 list with 28,800 reported cases. There were also more cases of mumps, viral hepatitis, and the venereal diseases. There was a substantial decrease in cases of measles and pertussis.

Tuberculosis

Tuberculosis ranks sixth among notifiable diseases in the number of new cases. It is responsible for half the deaths due to notifiable diseases. Preliminary figures indicate a less rapid decline in the number of new cases in 1960 than at any time in the past ten years. Similarly, the deaths from tuberculosis are expected to show a smaller decrease than in recent years.

The State Department of Public Health and the California Tuberculosis and Health Association jointly sponsored the formation of an inter-agency council to define and apply the accelerated program recommended by the Arden House Conference held in New York in 1959. The membership of the council represents official state agencies and statewide professional and voluntary associations concerned with tuberculosis. The council has found a serious deficiency in the availability of laboratory services for providing sensitivity tests as a guide for chemotherapy in the treatment of non-hospitalized patients. Legislation will be requested to support the extension of this type of laboratory services.

Venereal Disease

The current trend in venereal disease is unfavorable. There have been substantial increases in reported cases of both infectious syphilis and gonorrhea.

There were 1,442 cases of primary and secondary syphilis reported through November 1960. This is an increase of 51 percent over the cases reported in 1959 and a 146 percent increase over 1958. Most of the cases were reported from the densely populated areas, with 739 from the Los Angeles metropolitan area and 508 from the San Francisco Bay metropolitan area. However, thirty-eight of

California's fifty-eight counties reported one or more cases.

A total of 17,682 cases of gonorrhea was reported in 1960, an increase of nearly 2,000 over the number of cases reported in 1959.

Until immunizing agents against either syphilis or gonorrhea are discovered, intensive case-finding activities, public education, and prompt therapy must continue as the best means of controlling the spread of these infections among our population.

Many of the problems in VD control are intensified by the speed and availability of transportation, so that persons exposed to infectious venereal disease may have traveled thousands of miles away from the health jurisdiction of the suspected contact before they can be interviewed.

These rapid movements of the exposed persons require equally rapid action by local health departments. To seek ways of more effectively following cases and suspected contacts, the State Department of Public Health has planned a series of inter-health department conferences. The first was held in the San Francisco Bay Area in September 1960.

As a result, a list of persons in the Bay Area who are available to expedite the case-finding, diagnosis and treatment of cases referred from one local health department to another was made, and telephone communication was strongly encouraged. Since there was a definitely expressed need

for future interchange of information, specific meetings will be called semiannually, by agreement of the conferees.

Influenza

During the early part of 1960, California experienced an epidemic of Type A influenza (Asian strain) which was short in duration but severe in its effects in terms of both morbidity and mortality. All areas of the state were affected, but Southern California felt the greatest impact of the epidemic.

School and industrial absenteeism rose sharply in January, but by mid-February it had tapered off to normal in most areas of the state. Approximately 26,000 deaths occurred in California during January and February, which was about 3,800 more deaths than were expected to occur on the basis of the trends established by previous years. Most of the increase in mortality during this two-month period was among those 65 or more years old. Of the 3,800 "excess" deaths, about 1,000 were directly attributed to influenza or pneumonia, while the remainder were due to other causes, predominantly cardiovascular diseases. A definite increase in total mortality is usually observed during influenza epidemics.

Influenza assumed epidemic proportions in many other parts of the nation early this year, producing a concomitant increase in mortality among older persons. It was largely this experience which led to the recommendation of the Public Health

Reported Cases of Notifiable Diseases in Rank Order 1960
With Comparative Figures, 1959 California
(Through November)

	Cases	
	1960	1959
TOTAL	121,523	116,401
Streptococcal infections	28,797	22,361
Venereal diseases	25,088	21,655
Gonorrhea	17,682	15,421
Syphilis (all stages)	7,250	6,130
Other V. D.	156	104
Mumps	23,615	12,096
Measles	21,946	40,267
Enteric infections	5,306	5,120
Amebiasis	493	552
Shigellosis	1,936	1,934
Salmonella	1,202	1,062
Food poisoning	1,619	1,502
Typhoid fever	56	70
Tuberculosis	4,749	4,749
Hepatitis, viral	4,526	2,471
Pertussis	1,847	2,308
Encephalitis, infectious	470	391
Poliomyelitis, paralytic	362	387
Meningococcal infections	189	176
All other notifiable diseases	4,619	4,420

Source: State of California, Department of Public Health, Bureau of Communicable Diseases

Service, with which the California State Health Department concurred, to urge influenza vaccination as a routine protective measure for all individuals over 65 years of age.

Poliomyelitis

The reported incidence of poliomyelitis in 1960 has remained at about the same level as in 1959. Through the first week of December 1960, a cumulative total of 364 paralytic cases have been reported as compared with 409 for the same period in 1959. The pattern of the disease has remained unchanged during recent years. About 80 percent of this year's cases have occurred in non-vaccinated individuals, or in those having received fewer than the minimum recommended three doses of Salk vaccine. Approximately 40 percent of the cases have occurred in children below the age of five.

No localized epidemics occurred in California during the year. However, clusters of cases were often found to be concentrated in urban areas having a high proportion of poorly immunized persons. Of the large geographic sub-divisions of the State, the Los Angeles-Orange County Area, San Diego, and the Sacramento Valley had attack rates of paralytic poliomyelitis slightly higher than the average for the entire state.

A total of 23 deaths from polio have occurred so far this year. With the exception of one case who had had three injections, these fatal cases were either inadequately vaccinated or not vaccinated at all. Seven cases were in children under five years of age, while the remaining 16 cases were in persons from ages 19 to 51.

Arthropod-borne Encephalitis

The year 1960 has been a relatively low-incidence year for arthropod-borne encephalitis. A total of 14 cases—thirteen cases of St. Louis encephalitis and one case of Western encephalitis—have been confirmed by laboratory tests.

Experiments conducted at the California Men's Colony by the University of California show substitution of safflower oil for the mixed fats normally in the human diet results in a substantial drop in the amount of cholesterol retained in the bloodstream.—June 1960 *Governor's Council Report*, California State Department of Corrections

State Board Adopts Standards On Crankcase Emissions

The California State Board of Public Health adopted standards on crankcase hydrocarbon emissions, known as "blowby", on December 2, 1960. These standards limit the hydrocarbons for motor vehicle crankcase emissions to 0.15 percent by weight of the supplied fuel, as determined in a composite sample representing three specified modes of engine operation.

The standards were developed by State Department of Public Health staff after a review of all available data. The Department's Advisory Committee on Air Sanitation, consultant scientists, and technical groups reviewed the proposed standards before adoption. A public hearing was also held before the December 2 meeting.

The need for standards on blowby has been recognized since December of 1959 when the Board adopted standards for air quality and motor vehicle exhaust emissions. Although exhaust emissions are the main source of pollutants from motor vehicles, studies by several organizations indicated at that time that crankcase emissions also are a significant source of hydrocarbons. It became clear that although the volume of blowby gases is much less than the exhaust gas volume, the hydrocarbon concentration is much higher. When these facts became known, the 1960 Legislature extended the Department's responsibilities for standard setting to include motor vehicle pollutants from all sources, rather than from exhaust only.

Emissions of hydrocarbons from the carburetor and fuel tank of motor vehicles are also important sources of air pollution but existing data are not sufficient for the establishment of standards for these at present.

The Board recognizes their importance, however, and adopted the following policy statement at the December 2 meeting:

"The State Board of Public Health has established standards for hydrocarbons and carbon monoxide in motor vehicle exhaust and for hydrocarbons in crankcase emissions. Standards for hydrocarbon losses from the carburetor and fuel tank are not feasible at this time. The Board recognizes that carburetor and fuel tank hydrocarbon losses comprise a significant contribution to community air pollution and recommends that con-

Four Counties to Conduct Independent CCS Programs

Four counties—Orange, San Bernardino, Riverside, and Sacramento—currently operating Crippled Children Services programs in direct cooperation with the State Department of Public Health, recently announced plans to conduct independent programs. The change is expected to become effective during the fiscal year 1961-62.

Nineteen of California's 58 counties are already providing care to physically handicapped children on an independent basis. The State Crippled Children's Act makes it mandatory that all counties of the State appropriate a specified amount of money and operate a program for the care of crippled children.

A county which has neither staff nor facilities available locally for the care of physically handicapped children may conduct a program in direct cooperation with the State Department of Public Health. In such a county the local agency retains responsibility for case finding, determination of economic eligibility and collection of family reimbursements, maintenance of case records, and following the cases to completion including provision of public health nursing and social work services. The State Department of Public Health refers cases to the nearest available medical facilities, pays bills, and assists the county in planning care for the child.

On the other hand, a county with a large caseload and adequate local facilities available may operate a so-called "independent" program. In such a county the planning for medical care, authorization of services, direct payment of bills and other related activities are functions of the local agency. The State Department of Public Health offers consultation and provides certain statistical services.

It has long been the philosophy of the Department that the needs of the handicapped child are better met when the child, the medical facilities, and the administration are as close together as possible. The trend toward independent operation of Crippled Children's programs by county agencies is in accord with this philosophy.

controls be approved when technically and economically feasible."

Status of Air Pollution Control Districts

The proposal to activate the San Joaquin Valley Air Pollution Control District was defeated by a large majority of San Joaquin Valley residents at the November 8 general election. This was the first time in California and as far as is known, in the nation, that formation of an air pollution control district was put to the vote of the people. Eight counties would have been served by the proposed district.

Twelve of California's 58 counties are now included in air pollution control districts. The list includes 11 of the 12 most populous counties in the state and one relatively small one within the Bay Area Air Pollution Control District. Fresno is the only California county with a population greater than 300,000 not included in a district; Marin is the only county smaller than 300,000 so included.

In total, about 12½ million Californians, 78 percent of the state population, live in special districts organized for combating air pollution.

Los Angeles County Air Pollution Control District is the oldest and largest, and its research program is the largest in the world. Their research and experience has been of inestimable benefit to the smaller subsequently activated districts. Los Angeles County research on the causes and behavior of air pollution, methods of evaluation and control, its administrative patterns, its data on sources of emissions, and the efficacy of the control program itself have permitted other districts to organize their attacks on air contamination with some idea as to what was needed and how it should be accomplished. This has unquestionably resulted in more effective programs at lower costs than would otherwise have been possible.

G. C. Hass Appointed by Motor Vehicle Board

Gerhardt C. Hass, senior engineer with the Bureau of Air Sanitation of the State Health Department, left the Department January 1 to become supervising engineer for the State Motor Vehicle Pollution Control Board.

Mr. Hass, who has been with the Department for 11 years, has been actively engaged in the drafting of California's standards for auto ex-

Crumbine Award Entries Sought for 1961

Invitations have been extended to all full-time local health departments in the United States to submit entries in the 1961 competition for the Samuel J. Crumbine Awards. Two awards are presented each year—one for outstanding achievement in the development of a comprehensive program of environmental health, and the other for outstanding achievement in the development of a program of public food and drink sanitation.

The awards are sponsored by the public health committee of the Paper Cup and Container Institute, Inc., to give recognition to local health departments for their accomplishments in program development and to stimulate others to greater effort to perfect their programs.

One of last year's Crumbine awards went to the San Bernardino County Health Department for the development of an outstanding program of environmental health. (See *California's Health*, July 1, 1960).

Facts About Fellowships For Health Research

Information about fellowships for health research provided by 4 federal and 22 nongovernmental agencies is now available in a single report, *Fellowships for Health Research*, issued by the National Health Council.

The report gives details about the types of research fellowships, eligibility, the amount of the awards, the length of time for which the fellowships are awarded, location of training, and the time schedule for applications. Included also are summaries of presentations at a 1960 meeting of the National Health Council's committee on research, which provide valuable background information about the fellowship programs.

Copies of *Fellowships for Health Research* may be purchased for \$1 from the National Health Council, 1790 Broadway, New York 19, N.Y.

haust and crankcase emission control. Prior to state service he was chemical engineer in private industry. In his new position he will supervise technical personnel in the Board's control program, including the supervision of contract laboratories in the testing of motor vehicle pollution control devices.

Glaucoma Takes Heavy Toll In Californians Over 40

One out of every 50 Californians over the age of 40 is losing sight due to glaucoma ("tunnel vision"), a preventable condition if detected early.

Glaucoma is slow in onset, painless, and frequently results in considerable loss of vision before it is discovered. Sight lost from glaucoma cannot be restored, and blindness from this cause is inevitable without treatment. The key to prevention is early detection and adequate medical treatment.

Among the estimated 28,000 blind in California, glaucoma is the most important cause of irreversible adult blindness—causing 14 percent. The annual cost of welfare aid provided to needy persons in California whose blindness is due to glaucoma is about \$2.5 million.

Glaucoma is a disease characterized by increased pressure within the eyeball resulting in hardness of the eye, degenerative changes in the retina, damage to the optic nerve, and blindness. It may be secondary to a variety of other eye conditions and diseases, but in the vast majority of cases, glaucoma is primary and of unknown cause.

In its early stages, glaucoma can be detected by the use of an instrument which measures the pressure building up in the eyeball. This instrument, the tonometer, is easily used by physicians, and the procedure for measuring pressure in the eyes of individuals at risk can be readily carried out in large scale screening programs or as a routine part of physical examinations.

Personals

Dell F. Dullum, M.D., Public Health Medical Officer with the Department's Bureau of Radiological Health, has resigned to become a member of the radiology staff of the X-ray department of San Francisco's St. Mary's Hospital. Dr. Dullum has been with the Department since 1958 working primarily with medical societies and groups of physicians on the safe uses of medical X-ray equipment.

Edna Brandt, Chief, Bureau of Nursing, California State Department of Public Health, has been appointed to the Surgeon General's Advisory Committee on Nurse Education.

Public Health Positions

Kern County

Supervising Public Health Nurse: Salary range, \$502-\$610. Supervises public health nurses engaged in a generalized program. Desirable professional climate with excellent employee benefits. Requires California public health nursing certificate or eligibility, a master's or bachelor's degree, and three years of recent public health experience. Contact Kern County Personnel Department, Civic Center, Truxtun at Chester, Bakersfield.

San Luis Obispo County

Sanitarian: Salary range, \$419-\$505. Will have district responsibility for generalized sanitation program. California registration or eligibility required. Car furnished. Oral interview and evaluation only; no written examination. Write to the County Civil Service Commission, 967 Osos Street, San Luis Obispo, California.

San Mateo County

Assistant Sanitarian: Salary range, \$427-\$477. Requires college graduation with 30 semester units of basic sciences.

Sanitarian: Salary range, \$477-\$598. Requires certificate as registered sanitarian in State of California.

Public Health Analyst and Registrar: Salary range, \$491-\$614. Graduation from college and one year technical research or statistical work experience in public health and welfare is required.

These positions are in a combined public health and welfare department. For more information apply to Civil Service Commission, Court House, Redwood City.

Sonoma County

Analyst: Salary range, \$449 to \$539. Starting salary depends upon qualifications and experience. Minimum qualifications: graduation from an accredited college or university with specialization in statistics in public health or a closely related field, and some full-time paid experience in technical work with statistics desirable.

New Department Publication

The Health of California Workers, another in the series of reports by the State Department of Public Health based on the findings in the 1954-55 California Health Survey, has recently been published and distributed to selected agencies and individuals. According to this report, California's six million workers lose an estimated thirty-six million days from work each year because of sickness or injury.

The survey found that lack of sick leave coverage is associated with higher sickness absence rates. Men without sick leave coverage show a rate of time lost from work that is one-third higher than the rate for those covered. Women workers without coverage also show a higher sickness absence rate. The excess occurs in most occupation groups.

Sanitarian: Salary range, \$449 to \$539. Minimum qualification: registration as a sanitarian with the California State Department of Public Health; desirable qualifications, completion of four years at an accredited college or university, with a major in one of the natural sciences.

Public Health Nurse: Salary range, \$429 to \$515. Minimum qualification: certification as a public health nurse in the State of California. Desirable qualifications: graduation from an approved school of nursing, preferably with a bachelor's degree in public health nursing.

For further information and application forms, write to the Sonoma County Civil Service Commission, Room 110, County Administration Building, 2555 Mendocino Avenue, Santa Rosa, California.

In comparison with housewives, women workers show substantially lower rates for episodes of illness, days of disability, prevalence of chronic conditions and hospital admissions excluding deliveries.

It was also found that workers covered by some form of health insurance show relatively higher rates of illness and hospital admission and relatively shorter duration of hospital stay than those without coverage.

Among other findings is the fact that accidents at work show a rate of 459 per 1,000 among craftsmen, operatives, and laborers, compared with 162 per 1,000 for men doing "white collar" work.

The detailed analyses in this report may facilitate broader planning for workers' health by throwing light on areas where there has been little information prior to the California Health Survey.

Additional copies of the report are available to medical and public health personnel within limits of the remaining supply.

Only 43 percent of physicians smoke cigarettes regularly, 5 percent occasionally, according to a national survey conducted for the American Cancer Society. Of the 29 percent who used to smoke, a large majority have quit during the last nine years. Thirty-three percent of MDs said cigarette smoking "definitely" was a major cause of lung cancer, 31 percent said "probably".—*AMA News*, November 14, 1960.

Documents Division
General Library
Univ. of Michigan
Ann Arbor, Mich.

an
ni
pr
an
fr
an
fo
an
th
pe

qu
lic
co
ri
sp
H
B
P
of
F
A
po

di
do
re
pe
re
ad
wi
er
er
of
Co
ar
ex
be
se
fo

dis